CALIFORNIA ENERGY RESOURCES CONSERVATION

AND DEVELOPMENT COMMISSION

RENEWABLES COMMITTEE

WORKSHOP

CHANGES TO THE EMERGING RENEWABLES

PROGRAM GUIDEBOOK

CALIFORNIA ENERGY COMMISSION

1516 NINTH STREET

HEARING ROOM A

SACRAMENTO, CALIFORNIA

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Christopher Loverro

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COMMITTEE MEMBERS PRESENT

John Geesman, Chairperson

Jackalyne Pfannenstiel, Committee Member

Melissa Jones, Commissioner Advisor

STAFF PRESENT

Gabriel D. Herrera

Bill Blackburn

Tim Tutt

Tony Brasil

ALSO PRESENT

Chuck Maas
Appropriate Energy, Inc.

Jan McFarland
ASPv/PVMA

Mark Robinson
NEXTEK Power Systems Inc.

Bill Brooks
Brooks Engineering

Harold Hirsch
Pacific Gas and Electric

Manuel Alvarez
Southern California Edison

I N D E X

P R O C E E D I N G S

CHAIRPERSON GEESMAN: This is a workshop of the California Energy Commission's Renewables Committee to solicit public comments on proposed changes to the Emerging Renewables Program Guidebook. The nature of those changes are summarized in the notice for the workshop. The Guidebook has been made available. I think everybody here has probably been here before several times, so let's get into it.

Bill, do you want to take the lead, or Tony?

MR. BRASIL: Sure. Yeah, Bill will be doing the presentation today.

MR. BLACKBURN: Good morning. I'm Bill Blackburn, and the lead of the Emerging Renewables Program. It's my pleasure to spend the next several minutes walking you through a summary of the proposed changes to our Guidebook. I will be happy to answer questions, but I would prefer it if you could wait until the end of my presentation.

Okay. A little background. The revisions for the Guidebook gives us really an opportunity to review current market conditions,

key program issues, and provide clarification where necessary. What we're going to do today is really talk about the proposed changes, listen to comments, answer questions. We will then be directed by our Renewables Committee to go back and make any changes necessary, and then it'll be brought before the Business Meeting before the full Commission, which we intend to do June 22nd, for approval. And after it's approved, that's when the next Guidebook will take effect.

We will, of course, as I said, take comments today, or you can provide comments through our Docket Unit, which I'll give you the details about that at the end.

I'm going to go through very quickly, and then in a little more detail, a summary of our changes. We are proposing to maintain the current rebate level for all technologies; change to a rebate level based on the renewable energy system completion date; increase the capacity factor of systems under the Pilot Performance-Based incentive program, or PBI program; drop the requirement that participants provide a letter of authorization to the utilities authorizing grid interconnection; suspend the Solar School Program;

clarify requirements for affordable housing projects; clarify requirements for new construction development; and a few other clarifying changes.

This slide here gives you just a little bit of an overview of where we've been the last few years. It goes by sort of our periods, which are six month increments, January through June and July through December. So starting the first half of 2001, you see in the blue bars, it says 4.9, that's the number of megawatts capacity that were, we received applications for, and then the red bars at the top show the rebate level. So you see it bumped up in the beginning and then has been on a slow decline. And if you look on the right-hand side of this graph you'll see where we currently are with the rebate level, which is $2.80 a watt for photovoltaics. And we'll talk about the details of that in just a moment.

The first major change, and certainly one of the most critical, is that we're proposing to not change the rebate level for any of the technologies. The technologies that we provide rebates for cover photovoltaic solar, which is 280 a watt; solar thermal electric and fuel cells

using the renewable fuel, that rebate level is at $3.20 a watt.

Wind is the other category, and it's split into two rebate levels. For the first seven and a half kilowatts it's $1.70 a watt, and above that, up to 30 kilowatts, it goes down to 70 cents per watt.

Another major change is the change of paying the rebate level based on the system completion date. So we anticipate that this will reduce the spike that we tend to have before a rebate change, spike in applications; reduces issues regarding incomplete end of rebate period applications; eliminates some of the issues with size changes. Does not change timing issues with reservation expiration or project completion. And there is an exception for new construction.

The pilot, or sort of demonstration program we have now that's the Performance-Based Incentive Program, we're proposing a minor change to that which would be raising the capacity factor to 30 percent from 25 percent, where it is today. This will effectively increase the amount of money that can be reserved for this program. It will be retroactive to the beginning of the program, which

is January 19th, 2005. And we have seen so far only modest participation to date. We think this may help increase participation. And it's really intended for systems that may be particularly efficient, photovoltaic systems such as ones that may have a tracking system.

Another proposed change is some clarification on our language and some options on new housing developments. So in lieu of a building permit, for instance, we would accept a master permit that would be adequate for reservation.

We are recommending offering an option for new home developers allowing limited reservations without predetermined sales. This, we think, will encourage builders to sell PVs as an option, it increases availability of PV for new home purchases, and allows or provides some opportunity, really, for builders to get some experience with PVs.

And the proposed criteria include obtaining reservation for PV installations on a model home, and additional reservations would be granted for ten percent of the lots in a subdivision, based on equipment for the largest

system on the models.

The next one is affordable housing. Here, we wanted to clarify the language in the Guidebook to include areas that have really not been discussed, like common areas or manager's units for affordable housing projects. All the housing units still will have to meet our 10 percent higher efficiency requirement, so that doesn't change.

And then a, some language we're going to insert, too, with specifically, very specifically, on inverter test protocol testing procedure for inverter manufacturers. So we would adopt some guidelines and really refer to this, this publication that you see here in quotes, "Guideline for use of the Performance Test Protocol for Evaluating Inverters Used in Grid-Connected Photovoltaic Systems", and provides essentially more detail to the test laboratories.

Our Solar Schools Program, we've added some language to. The Solar Schools Program provides a higher rebate level than the standard Emerging Renewable Program rebate that we're offering. The program no longer has available funding and is closed, so that language is

included in the Guidebook. It doesn't change the current participants, and that's important to note, that are in our Solar Schools Program, so no changes there. It's possible, if we get new funding, that we may reopen the program, and we will send out notices to the school districts.

And I believe this is the last slide. As I said, we will take verbal as well as written comments today. If you want to send in written comments after today you're welcome to. It needs to be in to the Docket Unit by this Friday, June 3rd, close of business, which would be 5:00 o'clock, and you can see the address here. And if you don't get it, you need to get it -- talk to me afterwards.

I think that is the last, the last slide. Thank you.

CHAIRPERSON GEESMAN: Why don't we go to public comment, then. And what I'd like to do is, is make certain that everybody has an opportunity to share your comments with us, so we'll, we'll stay as long as is necessary to do that. I've only got two blue cards. Ordinarily, people that want to speak fill out a blue card so I can call you by name, but anybody feeling shy or bashful

and hasn't filled out a blue card, I'll still call on you just by raising your hand after I've gone through my two cards.

The first one I've got is Chuck Main?

MR. MAAS: Maas.

CHAIRPERSON GEESMAN: Maas, I'm sorry. Oh, I see how you did that.

MR. MAAS: With my writing I should've been a doctor.

Here's a handout that we'd like to include for the docket distribution. I, I don't know how many -- do you want some copies? This is what I'll be talking about, if you'd like to distribute these.

CHAIRPERSON GEESMAN: Thank you.

MR. MAAS: My name is Chuck Maas. I work in the sales and marketing for a forthcoming small low end speed turbine manufacturer that would like to try to get some leveling of the playing field, as we call it in the state of California, for wind and solar. Right now it's our consideration that we're very highly discriminated against in, in pricing on rebates in comparison with all types of your solar systems. And I go through a couple of examples.

On the standard rebates, which the $2.80 was referred to earlier for solar, a system that we will produce that, that will generate probably something in the neighborhood of about 20 kilowatt hours per day for a turbine qualifies, based upon generator size which is fallacious, to start off with, inverter, inverter efficiency and the current rebate of $1.70. We would quality probably in the neighborhood of for about $4700 rebate for that system. That produces 20 kilowatt hours a day consistently for that particular household or farm, or whoever used it.

A similar photovoltaic system with the same amount of daily production, based upon using, I used a brand name in here because it's pretty consistent, 25 PP Solar Panels, that each produce about 1., or 142 watts for, for six hours per day for, with a 90.94 inverter efficiency, will get a rebate of $2.80 per watt, for a total of $9300, 9350. And that system would cost about 3300, $33,000 to install. Our wind system would cost $24,000 to install and get half the rebate.

So it seems like you've got your system totally convoluted, where you're, you're encouraging the wrong type of energies. And we

get into the special funding, which is where we would like to see wind included. You've got a special funding project, and on one of the slides that said there was modest uptake. Well, if you do your calculations you'll find out one of the reasons for that is simply that the, the 50 cent per watt rebate is pretty similar to the $2.80 rebate, only you have to wait three years to get it, so why would a person wait three years to get virtually the same rebate that they can get if they just file for the $2.80 rebate on solar.

And why is it solar only? Why is wind discriminated and not included in that? And I go into the following situation. If the Renewable Energy Program and the production based incentives is designed to -- designed for production purposes, then any type of incentive that causes production of energy to maximize the energy production, first of all, for whatever source. It encourages, it should encourage the buyers to buy the type of equipment that they get the biggest bang for the buck. And it should encourage the manufacturers to design systems that provide the biggest amount of energy from whatever source for the dollar invested. The current funding is only

available for PV solar. Well, one, well-designed wind turbines will deliver substantially more energy for each dollar invested by the CEC and the buyers.

So what we're saying is that you've got your system entirely backwards. If you were trying to involve people driving automobiles to get, to buy high mileage cars, you wouldn't pay the people that got the lowest mileage cars the biggest rebate. That's exactly what you're doing on your rebate system right now. It just doesn't make sense. You're causing the state to spend the most money possible to get the highest amount of energy production.

And we're trying to say well, let's take a whole look at this thing again, and, and the only thing, we don't care about the rebates right now, but if you included wind in the special funding program, your PVI program, wind would take off like a banshee. You wouldn't be able to -- and we have a turbine, for example, that will work everywhere in the state of California, about 80 percent of the planet, it works in Class 2 winds, which are your low winds regimes.

So areas that currently are not even

considering wind as an option, your coastlines, your -- I mean, just 80 percent of the planet. Right now, the current wind technology that you have available will only work in about five percent of your territory. We have technology that works in, in 85 and 90 percent of, of the state. So wind would be considered for, for tremendous amounts of people that never even considered it before.

And that's the point we're trying to make, is that if you put your money where you can get the biggest bang for your dollar, then you're going to get people to participate in it. And until you get people to participate, it's our opinion that you're not going to meet your 20 percent renewable mandate.

So, do you have any questions?

CHAIRPERSON GEESMAN: Just one, and that is whether you have any views as to how easy to site the technology that, that you mentioned would be in that 80 percent of the territory that you suggested it might work in.

MR. MAAS: Well, the, the technology that we have, and I can certainly, I, I know you're an influential part of this Commission and

I would like to, and I've given to Dora Yen, we've classified the technology for her and she's quite enthusiastic, at least at the meeting. And as the, I would say possibly the silver bullet that will, the wind is actually needed to actually take off, because siting is not nearly as important due to the fact that these, the, the technology is simply very very large blades on small turbines.

And as you currently rate your rebates right now, you, you have a system whereby you are encouraging people to buy turbines with large generator ratings that don't particularly work where they buy them and where they try to site them. And there's really only two major competitors in this business right now that are manufactured in the U.S., and most of those require wind regimes where people don't actually like to live very much.

So you're, you've got a technology for the personal, the personal turbine that is really not -- you rate it on the size of the generator, not the production that the machine gets. And we've taken the entirely reverse position as a company and, and designed a machine that, that captures the, the largest amount of wind which is

Class 2, or somewhere between four and five, somewhere between eight and ten miles an hour. And if you look at your wind maps of the state, the majority of your state right now is -- of our state, is, is Class 2 winds. And the majority of the world is Class 2 winds.

So this whole, this turbine was designed to work on -- all around the world, not just in particular high wind zones, and, and so bringing wind into the, into the energy production factor in a manner that it has not been brought into at the current present situation.

CHAIRPERSON GEESMAN: And what size is, is the turbine that you're talking about?

MR. MAAS: The, the size of what, the generator?

CHAIRPERSON GEESMAN: Yeah.

MR. MAAS: It's around 3, yeah, a 3 kilowatt generator.

CHAIRPERSON GEESMAN: Have you got any urban or suburban installations in California?

MR. MAAS: This is a very unusual -- I'm not getting into a sales pitch on here, but this is a very unusual, it's American technology that was never sold in America. It was designed and,

and because they didn't like the liability factors and a lot of other things, it was set up in Hong Kong and it was designed to actually empower the third of the planet that does not have power and bring in the most efficient form of a renewable energy into the villages and, and isolated locations around the world.

And it was a -- almost successful. They had many, many large contracts with Bangladesh and South Africa, and, and so there's hundreds of installations in Australia, Kenya. I can give you the background on it. So it has been in, it's actually been in effect almost 20 years. And we only know of two in America that were bootlegged in here, and they're in Pennsylvania right now. Everybody's happy with the technology, it works. So what we're trying to do is actually resurrect the company, bring the technology, it's highly needed in, in our current environment.

And, and you know, if you've got the, the microchip of the, of the renewable energy business and know the impact that it might have as far as realizing some of these mandates that have been put in place that we would like to see the state get the 20 percent renewables, but how in

the hell are they going to get there? You're going to have to have everybody participate to some degree, and it's our opinion that you can't use the most inefficient way of doing it, you should be using, be using the most efficient way, which is capturing your wind regimes in manners that don't, that don't bother people.

And the problem, another big, major problem with wind is that you don't need to get building permits to put up, for the most part, for solar panels. They just, it's a, a procedural thing, and you -- and wind, you have to get conditional use permits. And we've got some very -- counties in our state. Los Angeles, for example, it's difficult to get one for under nine months. You have a six-month period that you can't, so you blow the sale right out because the guy says hey, I'm not going to put in this $2500 application fee and not even know if I can get the turbine up, and then not even know if I can get a rebate. So the sales don't take place.

And if you look at your, if you look at the reasons why the sales don't happen in, in the state, I've given you two or three reasons right now, is that the rebates are in the wrong place in

the wrong amount, and you're not taking wind into consideration for the constraints it has versus solar. But given a level playing field, that's all we're asking for, if you level out that playing field and wind will take off like, like a rocket.

CHAIRPERSON GEESMAN: Well, the large scale wind technology has taken off.

MR. MAAS: That's correct.

CHAIRPERSON GEESMAN: I, I think with respect to the smaller, as I think you characterized it, personal turbine size, that you need to, you need to analogize that to the photovoltaic program or technology, and I, I think one of the primary underpinnings of the state's focus on photovoltaic technologies has been the belief that it has a near universal application potential in terms of the absence of, of likely siting problems, and the belief that, that the state's incentives can help bring production costs down.

MR. MAAS: That's our goal, also. Just to get by, where we can get by, we can get --

CHAIRPERSON GEESMAN: And I, I think where, where you have a bit of a hurdle to

overcome is persuading, probably initially this Commission, and ultimately the legislature, as well --

MR. MAAS: That's why I'm here.

CHAIRPERSON GEESMAN: -- of the prospect for a potential universal application.

MR. MAAS: Yeah. We, as close -- in the wind industry in the world, as close as you can get to a universal application, it's our technology. That's, and we have come and, and shown your technicians how it works. We have a difficulty on, on getting the testing for, to get into your certification program because the major testers have all gone out of business so there's no place you can get a, a valid test in this country. And we're trying to work with the University of California which is setting up a test facility in the Bay Area just for their engineering department, and hopefully, because they're a good university and have some credibility, that maybe you can take some of those results. But that is, that has, that has to come.

We have test results from universities all over Australia, Indonesia, government tests, I mean, our stack of tests is this high. And we've

talked with your renewable energy department to see if, in fact, we can, some of those can be validated. Your test, if you look at your test requirements for wind, it puts them into regimes where -- way higher than ours are required to work in. And so we did all our testing in much lower winds because we didn't need those high winds.

We were, our, our test was to prove that you can get energy out of a breeze and not the, and not a, a strong wind, and that was the purpose of our tests. And so they, they don't quite reach your 11 and 14 mile an hour positions because we didn't need those strong of winds to work in. And we had to prove that they would work in seven and eight and nine mile an hour winds. And we did that. So logically, we say if they can work at eight or nine mile an hour winds, they sure as heck might work in 14 and 15 mile an hour winds. I mean, that would be the logic. And whether you can vary the rules enough to accept our, our logic is bureaucracy, we don't know. But we're trying.

CHAIRPERSON GEESMAN: What's my neighbor going to say if I install your system on my house?

MR. MAAS: Well, the, the logic of wind is that the higher you go, the better the wind.

It's cleaner and purer, and most of the turbines work on a horizontal axis basis where they require a pure, unadulterated wind, because they, it doesn't damage the equipment. And so they, some people might object. In fact, a lot of people would object. I wouldn't recommend them in the downtown Sacramento or any other -- but you have so much rural areas in this state. I mean, God, you look at the farms and --

CHAIRPERSON GEESMAN: Not many people live there.

MR. MAAS: Huh?

CHAIRPERSON GEESMAN: Not many people live out there, though.

MR. MAAS: Well, they have energy requirements. There's a power line around most of them, and, and so they have the same, same needs and desires. You do have your state requirements of trying to keep the local jurisdictions from being too sloppy on giving permits. That doesn't work, by the way, but -- and we can give you several examples of how that comes back, and I don't think it should -- think we should go to the Attorney General and make him enforce these rules and not let these counties, they get away with it.

But that just requires an awful lot of manpower and legal expenses, and things like that.

And, you know, we'd rather get these turbines up in the air. We can work effectively off a 60 foot tower, which is not too much higher than most telephone poles.

CHAIRPERSON GEESMAN: Uh-huh.

MR. MAAS: So we, if you get up to 80 feet, you get a, every 20 feet you get about a 15 to 20 percent efficiency factor, so you can imagine if you've got a $30,000 piece of equipment and you spend another $2,000 to increase the efficiency on that thing 20 percent, some people just might do it. But we want to -- we want these to be compatible to, to the communities.

And, in fact, we would like to see a schools program whereby there are plenty of school yards with plenty of space, and to encourage the -- solar's fine. I mean, I, I think solar has got to be part of the mix. But solar's very passive, and when you're working in an engineering department or getting kids interested, to see a propeller turning is, is a little bit more exciting than looking at a meter running around. And, and also, it gets people in the communities

thinking solar to, I mean, getting, getting wind.

So, a little side comment. If you would consider wind, and we have set up a dealer program where we will put everything in at cost if the local dealer will do it at cost, and we can get the, we can get turbines up on the schools so that they have a working project in their school, it's part of the community, and they might become more and more acceptable throughout the community.

And I think once these things are all up and, up and running and they're not these huge big machines that, that just frighten the hell out of me, and I'm sure a lot of other people, that they're more large television-like. Those of us from the television era remember everybody had an aerial before cable. And some people didn't have pretty good reception, so they had to put the aerial up a little bit higher. But it didn't, somehow it didn't ruin the state of California, it's just that cable came along and replaced it.

But I think that if we get everybody showing that they're doing something, I've got a turbine on my house, what are you doing, it becomes more of a, a not so much worried about -- they start thinking a little bit more about the

planet and their golf game, or whatever.

Any other questions?

CHAIRPERSON GEESMAN: Commissioner Pfannenstiel.

COMMITTEE MEMBER PFANNENSTIEL: Yes, sir. Can you give me an idea about how many installations do you have globally? You mentioned in several other countries.

MR. MAAS: We've got about close to 400,I reckon.

COMMITTEE MEMBER PFANNENSTIEL: And are any of them in populated areas, or are they all rather in, in rural places?

MR. MAAS: Well, the whole purpose of it was to empower people that didn't have power, and most of those were in rural areas. So, and that was the whole goal of the company, so we, we've got villages in India that had never seen power, they bring in six of these little small turbines and they set up a sewing machine factory, and all of a sudden that little village has an economy. They did it in the Philippines, they're drying seaweed, they got -- and, and they did it in Indonesia, where all these places, these people never had power, they don't have a light switch

like we do.

And so the whole philosophy of the company was to get these, starting to get these in place. And if we're successful here in America, we can certainly start helping the rest of the planet with this technology. That is our goal. I mean, I've done something. I just, I would like to leave the world a little bit better place than I found it when I was about 60, some years ago. So, and I don't have a lot of time, so we would like to implement these things as quickly as possible, if it is possible.

COMMITTEE MEMBER PFANNENSTIEL: How about countries like Denmark or Germany that have made strides in wind development generally, and that have a very --

MR. MAAS: They're, they're primarily commercial. They're not into the individual, and they need a turbine like ours because most of the commercial, the wind regimes are offshore or even, like in Germany, the onshore ones are taken over by power companies. And there are not viable -- America, for some reason, has the, kind of a lock on the small wind turbine market in the world. It, there are no really viable manufacturers other

than two American companies, and then there's some African companies, and there are no -- there's a couple of Scottish companies. And, and we intend to, we intend to set this up in Britain also, as the next step, to, to sell to the individual usage throughout Europe.

COMMITTEE MEMBER PFANNENSTIEL: But I, yeah, I was just wondering whether you had found a market in places like --

MR. MAAS: Oh.

COMMITTEE MEMBER PFANNENSTIEL: -- like in Denmark. Have you tried to market the individual turbines in places like that?

MR. MAAS: I live in Lake Tahoe, it's a lot closer to come to Sacramento to get the job done than go to Denmark. Yes, they have them. Anywhere there's wind, there's a market. That's, I mean, that's, and, and anywhere -- Class 2 winds, there's 80 percent of the planet there's a market. That's, that's how you define the market.

COMMITTEE MEMBER PFANNENSTIEL: Thank you.

MR. MAAS: Sure.

CHAIRPERSON GEESMAN: Thank you very much, Mr. Maas.

MR. MAAS: Thank you.

CHAIRPERSON GEESMAN: Jan McFarland.

MS. McFARLAND: Good morning. My name's Jan McFarland, I'm with the Americans for Solar Power and the PV Manufacturers Alliance.

I'd like to thank Commissioner Geesman and Commissioner Pfannenstiel, advisors and staff, for keeping the PV program alive the last two and a half years -- I know it's been a herculean task -- also for your support on SB1 and, and the work that you're all doing on the administration PUC proposals for the million solar roofs. I'd also like to thank you for maintaining the rebate at the current level. We, we think that's appropriate, and very much appreciate that.

In terms of the system completion date, we understand the goal. I think where it's going to be a little bit difficult is in terms of the processing of the applications. We, we can't always tell how long it's going to take, and it's hard for us to schedule actual installations. And so it's a, a point I think we've brought up before. We would really like to see some outsourcing of, of the applications and for something like a private escrow service, and we're

willing to pay the up front application processing fee, and hopefully you all will get some authority to do that over time.

CHAIRPERSON GEESMAN: Yeah, I think we're all in the same place. We, we'd love to do it that way. We need the legal authority to do so, but --

MS. McFARLAND: And it's no, no disrespect to the staff, too. I think it's very important for you all to know that there's lots of paper flying around and it's hard to keep it all together. A lot of people call, we get a little impatient. We're trying to keep our customers happy, and it doesn't always come across that way, I, I suspect.

But, but at a minimum, the A-1 applications, or the R-1s, it would be very helpful if they were quicker. And we, we're experiencing six to eight weeks, I think it's about, and that will make it hard, especially if you think about October of this year. I think we'd have to be having maybe contracts for two levels of rebate levels, depending, and so we just have to think through that.

Lastly, on the performance based

incentives, I think it was a lot of us involved that, that thought we really needed to look at performance based incentives. We think that's the, the next level to go to. And what I think is very important is that we open up this process. I, we're really curious about how many applications you have. I think that performance based incentives may end up being a requirement in the legislation this year, and we are very interested in working with staff and the Commission on this important -- because really, the most difficult part of this, I mean, we need to make sure it's going to work for the financial community and the customers, but that feedback, what's the most cost effective way to figure out what the output of the system is, and, and how to incent that in a proper way.

So we are looking forward to working with you on this matter, and we hope the process opens up a bit more. Thank you.

CHAIRPERSON GEESMAN: Yeah. Let me say on that, I think that -- and the legislature may get there before, before we do, but I think that we, the Public Utilities Commission and the industry, are likely to, to need to come to grips

with this performance based question, and I'm not certain that in any particular market sector you can really effectively conduct two programs, a front end rebate and a performance based incentive, and I think that it's quite likely to be necessary to choose one or the other in a particular market sector.

I don't expect that to be popular. There's not very much about this program that is popular. But as the state makes efforts to scale it up, I think there are going to be some necessary hard choices to be made, and the performance based incentive is one of those that's probably looming the largest in front of us as we go forward.

MS. McFARLAND: I think that's right. And, and the reason why we proposed the pilot in the beginning is we want to make sure we have something that's really workable before we make a transition and have more dislocation in the market than really necessary, so.

CHAIRPERSON GEESMAN: Fair enough.

MS. McFARLAND: Okay. Thank you.

CHAIRPERSON GEESMAN: Thank you, Jan.

Other members of the audience, come up.

MR. ROBINSON: Thank you. I'm Mark Robinson from NEXTEK Power Systems. I came today in the hopes of learning a little bit more about your reasoning behind removing the requirement for the interconnect agreement, and was hoping we could discuss that for a moment.

CHAIRPERSON GEESMAN: Tony, do you want to lay that out?

MR. BRASIL: Yeah. With the Guidebook changes back in July, we, on the application forms, have language where we can share the information with the utilities. And it's our intent to give the utilities the information that they need to find out who should be interconnected, because there is sometimes a lag time between when the person completes the project versus when they actually get interconnected.

That would give the utilities every opportunity to find the customers, rather than at, at current, we currently get an authorization form from the customer that we then have to follow up with the utilities to confirm whether they are interconnected or not. And we currently require that the letter of authorization to be provided at some point after the payment. And getting that

information and that exchange is not working well, I guess is the best way to put it, and sharing the information with the utilities would give them all the information they need to cover any safety concerns, and to verify if somebody has a system that has not yet interconnected they can contact them and inform them of the process.

So we believe that that will address the concern without necessarily having an additional requirement of paperwork to turn in for payment.

MR. ROBINSON: Thank you.

CHAIRPERSON GEESMAN: Other comments. Yes, sir.

MR. BROOKS: Good morning. Bill Brooks, with Brooks Engineering. Also work with Kemos Energy in the technical services contract.

Thanks for having me up here, Commissioners and staff. Just wanted to, to go over a couple of things and since there's an opportunity to discuss these things at this point. Hopefully it'll be productive, and whether they can be additions to this particular Guidebook or something that we look at down the road, I'd like at least a chance to put them on the, on the table and, and discuss them a little bit.

We just finished the inverter performance process transition, and we can say as of yesterday, when we updated our list for the, seems like the tenth time in the last two months, that, that that process is pretty much transitioned, and that all the manufacturers have, have gotten their equipment in that want to be listed. Sharp Electronics was the last, last company to get their inverter tested and processed, and so now we have that information up on the Web. So it wasn't necessarily an easy process, but I think it was worthwhile, and we're, we're here today having transitioned that.

CHAIRPERSON GEESMAN: How many manufacturers are listed?

MR. BROOKS: That's a really good question. About ten. I believe there's about ten, and there's about 60 inverters that have gone through the process, so that's quite a bit of work. And really, you know, kind of hats off to the PV industry and the testing labs, because they did a tremendous amount of yeoman's work in getting that stuff together and getting it done. There were a lot of phone calls back and forth, and there were a lot of late nights, and there was

a lot of, you know, difficulties in the process, but I, I think it was, it went, for all intents and purposes I think it went very well.

And I think there is not nearly the contention coming out of that process than certainly could have been there, and certainly thanks to Tony and his efforts in that area.

One of the things that Tony and I discussed when we started going over this inverter testing issue was the fact that PV modules also have a similar issue in that the module ratings are somewhat enhanced by the manufacturer. The CEC program, Commission program has attempted to deal with that from the very beginning by producing the PTC conditions based on PVUSA test conditions, more reasonable ambient conditions of 28 degree ambient temperature and one meter per second wind speed and, and a thousand per square meter.

However, there's, there's been a variety of requirements that were recommended seven years ago, when the program started, and it was really, they were tabled because it was, it was seen at that time, and it's probably true, that the industry was so fledgling at that point that it

really couldn't take on a lot of additional requirements at that point. I think now our industry is far more mature, and so there are some things that I think would be beneficial to California specifically, that are actually being done by Europe, for example.

Germany and Japan certainly now dominate the world in, in the production and in the application of photovoltaics, and Germany currently requires a plus or minus three percent of nameplate rating in their, in their requirements. What ostensibly happens now is that California has a fairly loose ten percent requirement, and it's not very well defined, either, so it's, it's not a very, it's not a tight specification of any kind. It just says should be ten percent of nameplate rating.

And so what we're seeing coming to California is that modules are being graded and we essentially get four to -- minus four to minus ten percent modules. And we'll never see anything anywhere near the rating, because all those modules are required to go to Germany, because of the tighter rating. And so that's certainly putting our program at somewhat of a disadvantage

in the product that it's receiving. So --

CHAIRPERSON GEESMAN: Bill, how does that manifest itself? Does, is that lesser quality panels from the same manufacturer, or is it different manufacturers serving this market than serve the, the German market?

MR. BROOKS: I would say that it's, it's the lower quality panels. Basically, what happens is most manufacturers today will manufacture a product that is UL listed, as well as CU listed for Europe. It also goes through the tube listings and things like that. And so because they don't want to make ten different products for ten different countries, they make one product. But when they bin those products, and -- for sale, then what they're going to do is they're going to be very careful in binning the best products to ship to Germany because they know that they're being held to a higher standard there. And then the market here is going to essentially get some of the, the crumbs that fall from the table.

And it's just, that's what happens when you have specifications, and it's a, it's a natural way of, of operating. If I were a module manufacturer I'd do the same thing.

And so one of -- there's two things that we would like to put on the table as for consideration of the Commissioners and, and the staff, as far as to, to kind of bring this up to the next level. There is a process called PowerMark that has been established that is a U.S. based requirement, or it's a process, I should say, and that is, requires qualification testing and power validation testing. So qualification testing, I've been involved and my colleagues have been involved in qualification testing through IEEE and IEC for many years.

And the idea is that we want all modules to be able to meet a minimum standard, and under no circumstances would we accept anything below a certain minimum qualification standard. And so PowerMark was part of that process, and it established, it basically incorporated the testing requirements that IEEE 1262, which is the qualification document for photovoltaics, spoke of.

Now, in recent years we kind of rode the coattails of the German market, because in Germany, as well as in some other European countries, they require IEC 1215, which is the IEC

equivalent to IEEE 1262. And so now, for any manufacturer to sell product into Germany, they have to go through IEC 1215. And so that's been helpful to our market. We've kind of gotten the benefit of that to some extent.

And so this process would essentially be helping us to make sure that the product that's coming here is validated that way. We are seeing interest from China, Chinese market, to sell product to the U.S., and the UL listing is, is simply not a qualification test. It's a safety test. And it will safely not work at all if it fails. And that's essentially what the safety test does as part of the process.

And so I think there's a need to just kind of step it up and this, this process is, is one way to do it, and I think a recommended way, since it's already there. And then they also do testing of products coming off of, off an assembly line to see how closely they are to the, their, their standard test conditions specification that's printed on the back of the module. And so that would essentially give us an equivalent to what the Germans are doing right now so that we don't see this binning of product that comes into

California.

Then, lastly, to kind of go along with that, I think -- and augment that, we have had the PTC conditions process and number for, for the last seven years, but that number, very few people understand the fact that that number is simply a calculated number based upon the manufacturer's standard test conditions information, and they're not an operating cell temperature condition information. And then basically, it's a little paper study that says okay, in, in the real world this module should produce about this, and so that number gets put in there.

And it's certainly a better number than what's on the back of the module, and certainly more reasonable. However, it is not validated in any way, shape or form, and it's based on temperature coefficients that the manufacturer provides, and so there's a variety of things that, that give the manufacturer an incentive to be somewhat not aboveboard in providing their information to the state.

And so my recommendation, along with this PowerMark, is to actually test, field test modules at the PVUSA test facility, where, where

it got its name, and actually do what the, what the industry, actually many people in the industry believes has been going on for seven years, which is actually to test them in the field and to apply a PVUSA test conditions rating based upon what they actually do in the field.

I think this would be also an excellent addition to the California industry as a whole, and I think there would be trickle down benefits that would go across the whole United States, because like it or not, California leads the way in standards and in requirements, and in what makes sense. And it's, there's somewhat of a noblesse oblige to do these things and to help other states as their fledgling programs get started. And so I think that, you know, California can be seen in, in somewhat of a leadership role in that way.

The first thing that comes to mind when we recommend something like that is there are 450 modules, plus or minus, on the, on the current Website, which is an astronomical number of modules. I've been in this industry for almost 20 years, and the first UL listed modules came out in the early nineties, and there was, you know, for

many years there was like three. And so now there are 450. Of those 450, about 100 of them are, are from companies that no longer exist, modules that are -- many, probably another couple hundred, are no longer manufactured.

And, in fact, I went to the self-gen Website and looked at all the modules that are sold under the self-gen Website, and there are 24 modules in the last two to three years that have been sold, 24 different modules. There are very few modules actually being sold in the market today. And so the number of modules that would have to be field tested under this program and would have to be validated under this program, there's actually a fairly small number. Manufacturers, in order to get their, their manufacturing demand up are curtailing the number of models that they supply, and they are getting them out the door and, and trying to sell them in, in the large quantities, in the 165, 175, 185 kind of a regime, and, and so we see the number of modules dramatically reducing.

And so I think it would be an aid to the staff, as well, to have a much lower number of modules to work with. Not to say that we would be

excluding all modules. My recommendation, we don't have to get into all the details of it, is to actually, for modules that are UL listed that don't go through this testing process, that then they would receive like a, you know, 80 percent of what a tested module would receive. And that way module manufacturers could continue to sell those for special projects, and these are typically, you know, they have like 40 watt modules and 60 watt modules that may go into a special building application, or something like that, that needs a very small module. Those projects could continue to go on, but they are .0 squat of the market right now, and so it wouldn't be worthwhile to go and test that and go to the extreme of that.

So I think there's ways of working this out to make it, the testing costs as low as possible. We're also talking with, with the PIER program to see if, if they'd be willing to help. The PVUSA site, which is owned by Renewable Ventures, has offered their facility to be used for this process. And, and so we're, we're looking at, at ways of actually funding, getting, getting the testing gear up, up and running so that it's a minimum of cost to the manufacturers,

and that that process can be an ongoing process.

So that, that's my comments on module testing. I have one more comment, but if you'd like to ask any questions.

CHAIRPERSON GEESMAN: I have a question, is what do they do in Japan?

MR. BROOKS: What do they do in Japan. Japan doesn't like to give out a lot of information, I found, and they do have a, a very strict process, and, not to be overly humorous about it, but I believe Hari-Kari is involved somewhere in the process that if they, they don't live up to their standards.

No, but Sanyo, for instance, several years back was taken to task by the government for supplying modules that were below specification. And they had to pull off a couple of megawatts of product off the market. And that product ended up on their solar arc facility because they weren't allowed to sell it, and so they used it to power their own facility. That was a very substantial impact on that, you know, obviously, millions and millions of dollars of impact. And that, I think, had a big impact on the way the Japanese market has operated since then. I think, I think they

have been very careful about their ratings, and I think we've seen a, a change there.

How they -- so, the best we can see is the product that comes out of Japan, we can look at that and see how well it matches their standards, and they seem to do a pretty good job. They're certainly not less than any other manufacturer out there.

CHAIRPERSON GEESMAN: Thank you.

MR. BROOKS: Any other questions on modules?

The last comment is about the North American Board of Certified Energy Practitioners. There was some language in the past about that, and some of the language was unfortunate the way it was stated. I was, I was involved in trying to get language into the Guidebook in the first place, although I did not draft the exact language that went into the, the initial Guidebook that had that information in it.

I still believe that NABCEP certification is a process that should be embraced by the Commission. I have been very involved in the process of setting up the requirements and the standards for that, and I've continued on in that

area and working on the study guide to help, help contractors to be able to understand what they need to know to pass the test. And so my recommendation on the NABCEP process is that, that it not be a mandatory thing, but that the contractors that pursue this and actually acquire the NABCEP certification would receive a slightly higher rebate for their systems as a way of, of incenting them to go through the process and taking the effort and the time to become recognized in their field, and to actually step up to the plate.

There was, in the last test there was about a 46 percent passing rate on the test, so it's a very rigorous process. It's meant to be that way, it's something that your average Joe installer will not be able to pass unless they really pick up the pace and actually do what needs to be done and understand their field. So my recommendation is that similar to the fact that we have in place right now, the, the precedents of a 15 percent reduction for owner/installers, that we would have a corresponding maybe 15 percent increment for installers that were certified, and that would provide the incentive for them to go

and pursue that.

We have a disproportionately small number of California certified contractors. Throughout the United States contractors are pursuing certification more than they are in California and, quite frankly, it's because they don't have to. And they're, and they're not getting a, a benefit for it. They're not feeling like they're getting a benefit for it.

So, that's it for my comments. I appreciate your attention.

COMMITTEE MEMBER PFANNENSTIEL: One question. You said that throughout the U.S. they're getting certified at a higher rate than in California. Are they required to outside of California?

MR. BROOKS: I don't believe that there are any, any programs that will not allow you to operate in the program without it, but I believe that there are certainly language in several programs that, that encourage it. I'm thinking of New York state, and they currently do not require it, but I believe that they, they strongly encourage it. And so I would say in -- I don't know the exact numbers in New York state, but they

actually have a pretty high number of certified certificants.

COMMITTEE MEMBER PFANNENSTIEL: Do you know of anybody who incents it, as you recommend that we would do?

MR. BROOKS: I don't believe so. I don't believe there are any currently that do that.

COMMITTEE MEMBER PFANNENSTIEL: Thanks.

MR. HERRERA: Bill, a quick question.

MR. BROOKS: Yeah.

Have there been some studies that correlate how well systems perform if they're installed by a -- what is it --

MR. BROOKS: NABCEP.

MR. HERRERA: -- NABCEP certified contractor versus one that is not?

MR. BROOKS: As far as -- the program has only been out for about a year and a half, maybe two years now, so I don't believe that the data is really available to, to give us that. I think in California we could probably do some kind of a study there.

What, what I do know has been done is the Florida Solar Energy Center, back about six or

seven years ago now, did a study where they reviewed all the systems that went in under their program, which was somewhere around 50 systems under a small pilot program, and they found that, that practitioners that had been -- there, there was no NABCEP process available then, of course -- but they, they said they found that competent electricians that had been trained to do PV systems were -- provided the best systems involved.

But again, it required that they had to be trained, so it wasn't that just electrical contractors did better, but trained electrical contractors did better, and so that was kind of about the closest thing we got.

MR. HERRERA: Thanks.

CHAIRPERSON GEESMAN: Thanks very much, Bill.

MR. BROOKS: Thank you.

CHAIRPERSON GEESMAN: Anybody else that would like to make comments to us? Yes, sir.

MR. HIRSCH: Good morning, Commissioners and staff. I'm Harold Hirsch, from PG&E.

PG&E is especially concerned about the change to the ERP requirements for the receipt of

utility authorization before issuing the ERP funds. The proposed change in Sections Roman numerals five and six now only requires the utility authorization upon request of the Energy Commission. PG&E is concerned about customers failing to complete their utility inspection. This has costly implications for follow-up work, and can make the interconnection process unsatisfactory for -- an unsatisfactory experience for customers. Also, the utility customers may not get their full benefits, and the utility may not find out right away of such customers interconnection -- interconnecting.

The CEC lists equipment that is certified with the intent to assure the quality of the process. If the utility portion is not treated with the same regard the door will be left open for another problem with customer satisfaction. PG&E wants to work with the Energy Commission to simplify the process of getting the authorization to them, and PG&E hopes the Commissioners will reconsider this requirement for authorization and make it required for all applications.

Thank you.

CHAIRPERSON GEESMAN: Did you hear Tony's explanation of the approach that he envisions taking?

MR. HIRSCH: Some of it. I didn't catch all of it, I'm sorry.

CHAIRPERSON GEESMAN: So you, you're not able to respond then, now, as to whether you felt that that was, was responsive to the concerns you raised?

MR. HIRSCH: I think that, I think that there is some language that we found in the Rule 20 things that allows it to make it to make it much easier that we, that we just ran across, that allows to share energy with the Commission, and I think that is something that we hadn't realized before and would allow us to expedite this process.

CHAIRPERSON GEESMAN: Because certainly our intent has not changed, and we, we recognize the concerns that you've raised. And I think what the staff is trying to do is create more a efficient process that still accomplishes the objectives that we've had before, in terms of your interest. But if we, if we have failed to do that, or missed some part of it, or if there's a

better way to do it, I think both Commissioner Pfannenstiel and I would, would be very receptive to hearing it.

MR. HIRSCH: Okay. Thank you.

CHAIRPERSON GEESMAN: Thanks very much.

Manuel.

MR. ALVAREZ: Manuel Alvarez, with Southern California Edison.

I want to go back to the point on the interconnection provision. I guess when I had read the proposal it does allow the Commission staff to request that information from the utility. So that leads me to believe that the Commission's not interested or still wants to fulfill this requirement to have safety and, and additional inspections on, on a piece of equipment that goes in.

The problem you get into is the complexity of the interface between Edison's customers and the Energy Commission applicant or participant who is, may or may not be the customer that we, we interface with. You may actually be dealing with a third party. And the third party cannot authorize the release of information or inspections on that property. That has to be done

by the customer.

So at some point, the third party has to confront the customer, our customer, with a document or a piece of paper that says you are authorizing release of this information and you are authorizing inspections on the property to be conducted on your behalf. And that interface between the sales process of the equipment and the customer interface is what sometimes leads to this complexity over how the information gets transferred.

I know Tony's had phone calls with our folks and we're trying to work that out, and we're committed to, to trying to figure out how that process would work. I'm currently discussing with our group how we would lay that process out for a letter for you on Friday, so we'll be, we'll be submitting that information to you.

CHAIRPERSON GEESMAN: Good.

MR. ALVAREZ: Thank you.

MR. HERRERA: Manuel, a quick question. Is this something that could be accommodated through the interconnection agreement that Edison has that customers complete? I know San Diego, for example, in their agreement authorizes the

utility to disclose customer information, so that provision is actually in the agreement. But I noticed it wasn't in PG&E"s interconnection agreement, and it's not in Edison's, as well.

MR. ALVAREZ: What is a general agreement by the Public Utilities Commission that authorizes release of customer information, and that's just a document that has to be put in front of the customer saying you are authorizing this information to be released. And once they sign that document and then submit it, that information can be transferred.

But it's the customer's decision to do that, and, as we all know, whenever you have to put another piece of paper in front of a customer it causes pause and it causes reflection of whether they wish to sign that, which could affect the sale or the transaction that's being consummated.

MR. HERRERA: Thank you.

CHAIRPERSON GEESMAN: Well, let, let me say, Manuel, that -- and to the fellow from PG&E, as well, given the amount of time we have between now and the 22nd this is a bit of a moving target. But we will endeavor to, to reach some common

ground here.

MR. ALVAREZ: Okay. Thank you.

CHAIRPERSON GEESMAN: Other comments? I don't see any.

I want to thank you all for attending today. We look forward to any written comments that are filed by Friday, and then we will take this up at the full Commission Business Meeting on June 22nd.

Thank you very much. We'll be adjourned.

(Thereupon, the California Energy Commission Renewables Committee Workshop was adjourned at 11:40 a.m.)

CERTIFICATE OF REPORTER

I, CHRISTOPHER LOVERRO, an Electronic Reporter, do hereby certify that I am a disinterested person herein; that I recorded the foregoing California Energy Commission Committee Workshop; that thereafter the recording was transcribed.

I further certify that I am not of counsel or attorney for any of the parties to said Committee Workshop, nor in any way interested in the outcome of said Committee Workshop.

IN WITNESS WHEREOF, I have hereunto set my hand this 8th day of June, 2005.